

## **ABSTRACT**

**TITLE:** A CASE CONTROL STUDY TO COMPARE DISTAL FEMUR TUNNEL WIDENING BETWEEN SUSPENSORY FIXATION AND SUSPENSORY FIXATION AUGMENTED WITH BIOABSORBABLE SCREW FOR ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION WITH HAMSTRING GRAFT

**DEPARTMENT:** ORTHOPEDICS

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**OBJECTIVE:** Tunnel widening in ACL reconstruction is a common problem noted in suspensory fixation with hamstring grafts. Our hypothesis was that augmentation of the femoral side suspensory fixation with an interference screw (aperture fixation) negates this tunnel widening possibly caused by windshield wiper effect. .

**METHODS:** In our study we used quadrupled hamstring graft which was fixed with suspensory fixation on both sides and with an aperture fixation on the tibial side in both the groups. We observed tunnel widening in patients without augmentation and with augmentation, using immediate post operative x-ray and follow up x-ray. A CT scan assessment was also done at follow up.

**RESULTS:** Femoral tunnel widening measured by x-ray in the augmentation group measured at the widest point of the tunnel point 'D' was  $0.74 \pm 1.05$  (AP),  $1.01 \pm 1.04$  (lateral) and in the endobutton only group was  $1.54 \pm 1.48$  (AP) and  $1.79 \pm 1.47$ (lateral), both of which were statistically significant(p-0.038, p-0.038). Widening at the point 'E' (aperture) in the augmentation group was  $1.25 \pm 1.10$  (AP),  $1.09 \pm 0.98$  (lateral) and in the endobutton only group was  $1.53 \pm 1.30$  (AP),  $1.65 \pm 1.29$  (lateral). This was not statistically significant. The values of were comparable to CT. There were also better clinical outcomes in the augmentation group

**CONCLUSION:** Our hypothesis which assumed that tunnel widening would be reduced by the addition of the interference screw on the femoral side in addition to the suspensory fixation contributed to decrease in tunnel widening as well as better functional outcome was true. In addition to the radiological improvement, there was also clinical improvement noted in the patients both during immediate post operative period and during their follow up.

**KEYWORDS:** Femoral tunnel widening, Suspensory fixation, Aperture fixation, Augmentation